

Designing and Implementing a Qualitative Evaluation Protocol for Non-Credit Life Long Learning Programs¹

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This study was undertaken to determine whether an evaluation model employing multiple methods of data collection and analysis might yield more useful information for improving lifelong learning courses than existing models. Major findings included: (1) learning satisfaction appears to be dependent on the instructional environment adults may be most comfortable with and; (2) the confidence gained in using computers, rather than skills acquisition, was the greatest benefit students derived from their participation. Findings from this study suggest the value of mixed methods evaluation designs for generating information that is useful for improving lifelong learning courses. Findings also suggest the need for much more research in this domain of inquiry. Key Words: Non-credit Life Long Learning Programs, Mixed Methods Evaluation, Adult Learners, and Student Satisfaction

In recent years, increased emphasis has been placed on the importance of lifelong learning in the United States. As Field (1998) indicated, lifelong learning is not another educational fad that cycles through society every few years. Rather, the growing presence of lifelong learning constitutes a cultural change. Such change is indicative of the realization that the greatest economic growth is experienced by those nations whose populations participate in a continual process of organized learning throughout their adult lives.

Miller (1990) reported that the growth in lifelong learning programs experienced in the United States and Canada are indicative of the continual changes in our society brought about by technology, and its increasing importance on the professional and personal lives of its members. He claimed these societal changes have profoundly affected lifelong learning programs as adult learners evaluate those programs that assist them in meeting their learning goals and objectives. How students evaluate their learning

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experiences, as well as how they apply what they have learned, could significantly impact the viability of lifelong learning programs.

McConochie and Claggett (1991) found that while concern for instructional quality and accountability has resulted in institutions evaluating their traditional courses and programming, these same institutions have ignored their rapidly growing lifelong learning programs. Despite enrollment growth that has surpassed that of their traditional programs, institutional administrators often ignore concerns about program quality, even though lifelong learning programs are often self-funded and therefore dependent on sustained or increased enrollment to remain viable.

Based on a review of key research, Nesbit (1999) noted that the field of lifelong learning and the education of adults have grown over the past decade; as the importance of learning new skills throughout one's personal or professional life has become more relevant and indeed more necessary. In fact, Nesbitt noted that participation in lifelong learning programs in Canada and the United States has approached participation rates of nearly 40% of the adult population in both nations. He also noted this increase is in contrast to the single digit rates recorded from 1960 through the mid-1990s.

Purpose

This research was conducted to determine whether and to what extent a mixed methods evaluation protocol might provide more relevant and useful information for improving the effectiveness of non-credit, lifelong learning programs than is typically produced using predominantly quantitative research design grounded in positivist imperatives. The study included research in student satisfaction regarding their interactions with program staff during registration; their satisfaction with the college's instructional facilities; and their satisfaction with instructional content and delivery.

As Sork (1981), Miller (1990), and Sims (1993) have indicated, little prior research exists on the relevance of the service provided to students in the areas of registration, facilities, and overall communication between administrators as well as students' participation in lifelong learning programs. Such programs are short-term in nature, and typically do not result in a degree or certification, nor do they necessarily meet the criteria for funding supplied by state government.

McConochie and Claggett (1991) also found that little research had been conducted on evaluating the appropriateness and applicability of lifelong learning programs. Institutions offering these programs have continued to focus their evaluation and subsequent improvement activities on their degree programs, ignoring the increasing importance of programming that can potentially provide these institutions with much needed additional funding.

In this nontraditional yet increasingly popular sector of higher education, how adults evaluate their overall experience could be just as vital to a program's long-term success as the quality of education it provides. For programs that are heavily dependent on the fees generated by non-credit courses, for their viability, the effectiveness of the service provided to adult learners could result in the loss of revenue for the program.

Although research has been conducted on adult participation in educational programs, these studies have largely been confined to adult basic education, training programs sponsored by government, business, and industry, healthcare or traditional

college degree programs (Kunder, 1998; Ostroff, 1991; Tesoro, 1991; Walker, 1978). Additionally, these studies relied exclusively on the use of quantitative methods. Miller's (1990) was among the few studies that focused on the evaluation of lifelong learning programs. Although he employed qualitative methodologies, Miller collected data exclusively from program administrators and faculty rather than students. While such data was important for program improvement, his design did not take into account the importance of collecting student-derived data for such activities.

Stone (2001) developed a framework from which lifelong learning programs could determine the composition of their student population, the students' reasons for participating, and the level of satisfaction the students experienced as a result of their participation. To achieve these objectives, he developed survey instruments featuring quantitative and qualitative items that were mailed to students after they completed their courses.

While Stone's (2001) findings were relevant, the data he collected were limited by the study's design. In discussing his research, Stone acknowledged that employing additional, more diverse methods such as student interviews could have yielded richer data for improving non-credit lifelong learning programs.

Ricketts (2002) sought to gain a better understanding of how older adults react to the instructional strategies employed by instructors. She employed multiple methods of data collection including interviews with instructors and students after the completion of their courses as well as observations of each of the courses that were the setting for her study. Although Ricketts collected student interview data, she did so after completion of the courses. It is possible that the collection of data from students during the courses, through interviews and surveys, could have provided an additional measure of trustworthiness for her findings.

Ricketts (2002) recommended that research be conducted in whether older adults prefer a pedagogical approach to learning or an andragogical approach. She also recommended research be conducted in understanding how students applied the skills they learned to their personal or professional lives, suggesting the findings from such data could prove valuable data to providers of computer courses for older adults.

In this study, we sought to further the research on the evaluation of non-credit lifelong learning programs by employing more diverse data collection methods recommended by Stone (2001). In contrast to Miller's (1990) study, we conducted our research primarily from the perspective of the student. Additionally, we sought to expand on Ricketts's (2002) research by collecting the kind of data that would provide insight into the learning preferences of older adults, and how adult learners applied the skills they learned in the classroom to their daily lives.

We also sought to develop a better understanding of adult learners who ultimately determine the failure or success of such programs. To this end, we developed a mixed method evaluation model that would address these issues at two levels: (a) student satisfaction with their learning experience and (b) student satisfaction with the administrative aspects of the program including marketing, registration, and communications with college personnel.

Methods

As the primary author of this article, I should note that this study was conducted for my doctoral dissertation. This article's co-authors served as co-chairs for my doctoral committee. I have worked with non-traditional adult learners throughout my career in higher education, and I am, myself, a non-traditional lifelong learner. My interest in conducting this study was to further the research on adult learners' participation in lifelong learning programs.

Prior to undertaking this study, I met with Ivy Tech State College administrators to discuss the proposed research on several occasions. As a result of these discussions, an agreement was made on the data collection methods that were employed for the study, which are discussed later in this article. Upon receiving agreement from the college and approval from my doctoral co-chairs, I submitted a proposal for the study to Purdue University's Institutional Research Board with a request to conduct research with human subjects. The study was approved by the board as exempt research. All participants of the study signed informed consents.

Research Questions

This study focused on two courses and the services provided to adult students by the Lifelong Learning Program of Ivy Tech State College in Lafayette, Indiana. The study was guided by two sets of research questions. One set focused on students' experience within the classroom. Another set focused on students' experiences with the administrative aspects of the program.

The questions that focused on student learning included: (1) How did students evaluate their experience with their course? (2) How did students evaluate their instructor and the various instructional activities associated with their course? (3) What were the various learning objectives students brought into their course, and to what extent were they achieved? (4) To what extent were students, in a short period of time, able to transfer some of the knowledge and skills learned during the course?

The questions asking students to discuss their experiences with the lifelong learning program included: (1) How did students describe their experiences and interactions with college personnel prior to their course (e.g., marketing, registration, communications on class location, required textbooks, etc...)? (2) Were there significant differences noted by students in the two courses that were the focus of this study, regarding their experiences and interactions with college personnel prior to the course? (3) Were there significant differences noted by students in the two courses regarding their experiences and interactions with college personnel after the course?

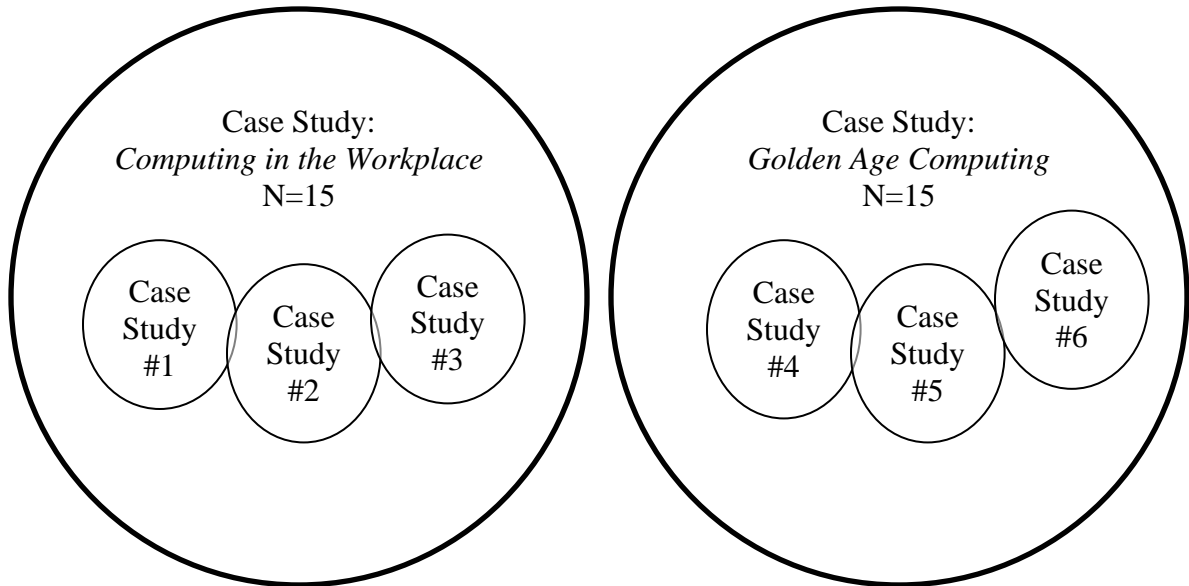
Research Design

The study's design was based on what Tashakkori and Teddlie (1998) called a "Dominant-Less Dominant Mixed Method design." The design's dominant component was qualitative in nature and involved collecting interview, observational, and archival data. These data were analyzed using the constant comparative method of grounded theory analysis (e.g., Glaser & Strauss, 1967). The design's less dominant component

was quantitative in nature. Data from student course surveys were collected and analyzed using both descriptive and inferential statistics.

The dominant component of our study also featured a nested case study design (Yin, 1994). This design consisted of case studies of the population of the two distinct courses that constituted the focus of the research. Nested within these two greater case studies were case studies conducted on individual students purposefully selected from each of the two courses (See Figure 1).

Figure 1. Illustration of the nested case study design employed for this study.



Beginning with the first session of each course, this article's primary author conducted observations from the perspective that focused on the activities and interactions that occurred within the classroom. Beginning with the second session of each course, and alternating thereafter, I observed and recorded, via audio tape and field notes, the activities of the individual case study students, their interactions with other students, and their instructor as well as their reactions to situations that occurred within the classroom.

Based on the data collected, I developed questions that were asked during the case study and the end-of course interviews. As the study was conducted from students' perspectives, questions referencing the instructor, sought students' positive or negative impressions from their interactions with him, and their evaluations of his teaching style.

The study's design resulted in an understanding of the classroom environment of each course, and its effect on the case study participants who registered for them. The audio tapes, field notes, photography, case studies, and the end-of-course interviews not only provided triangulation, but also resulted in a much richer source of data than could be obtained through a single method. The various collection methods we employed were appropriate for answering the questions developed for this study on students' evaluations of their experiences with their courses and the program's administrative services.

Setting and Participants

Participants were 30 adult students enrolled in two non-credit computer software-training courses in the Lifelong Learning Program at Ivy Tech State College in Lafayette, Indiana. The college is one of 24 campuses of Indiana's state-supported community college system. While its mission is to provide two- year terminal associate and transfer degrees, the college also provides community-learning opportunities to adults through its non-credit Lifelong Learning programs.

Such opportunities offered at the Lafayette campus include: *Computing in the Workplace*, which is marketed to adults below the age of 50 and *Golden Age Computing*, which is marketed to those above 50 years of age. The population of each course consisted of 13 women and two men registered for *Computing in the Workplace*, and 13 women and two men registered for *Golden Age Computing*.

Through the use of purposeful sampling, three students from the *Golden Age Computing* class, and three students from *Computing in the Workplace* were asked to participate in the individual case studies. Specifically, two females and one male were selected from *Golden Age Computing*, while three females were selected from *Computing in the Workplace*. Participation in the case studies included three in-depth interviews conducted at various stages throughout each course, and responses to follow up questions generated by the interviews.

The criteria used to select these participants included: (a) the ability to directly observe their in-class activities throughout the duration of each of the courses and (b) the initial observations of characteristics, situations, or mannerisms that distinguished these individuals from their classmates. For example, two participants I observed during their first class appeared to be conversing and helping one another throughout the session. After class, I learned they were married. Another student was extremely vocal throughout her first class to the point of disrupting instruction. I learned after her first class session that she was an unemployed truck driver. The fourth participant was a retired teacher, the fifth, an account clerk, and the sixth case study participant was a small business owner.

Interviews were also conducted with the individual who was the instructor for both courses. During these interviews, he was asked to compare the teaching methods that he was observed using in each class. Although not planned for the study, the instructor interviews helped me to better understand the different instructional strategies employed by the instructor that were evident during the first session of each course. Those strategies are discussed later in this article. All participants of the study, including the instructor, were asked to sign informed consents prior to the beginning of each course.

Data Collection

The study employed a combination of quantitative and qualitative data collection methods, including Likert-type surveys, open-ended questions, researcher observations, and interviews featuring semi-structured and unstructured questions. By employing these various methods we sought to triangulate the data that were collected throughout the study.

Triangulation provided us with the ability to validate the integrity of the data that were collected through the various methods we discuss in this section. Use of these methods also provided us with the opportunity to develop a more detailed account of students' experiences as well as the learning environment that existed within each class. Finally, the procedures and strategies we employed allowed us to effectively determine whether the development of a model featuring multiple data collection methods could be useful for the evaluation of non-credit lifelong learning courses.

Observations

During the initial stages of the study, we proposed to videotape the activities of the students and instructors during each of the classes. However, due to concerns over videotaping expressed by the college's program administrators, audiotaping and written field notes supplemented by the use of non-flash photography were proposed and accepted as reasonable alternatives.

Observations were conducted by this article's primary author from the focused perspective of observing the activities and interactions of the case study students, as well as the broader observations of the entire population of each class. The case study observations were alternated with those of the entire population throughout the duration of each course. The audiotapes produced during the observations were cataloged in chronological order along with the written field notes.

The data collected during this phase provided an additional basis for the development of questions asked of participants during the case study interviews. These data also provided an additional basis for the development of questions that were asked during the interviews that were conducted with all students after the completion of each course.

Photographs were taken during the observations of each course to assist us in developing an accurate description of the learning environment and activities that occurred within each class. The photographs were catalogued and cross-referenced with the field notes. The observational data were then compared with the self-report data generated by students via the surveys as well as the interviews that were conducted.

Case Study Interviews

Throughout each of the courses, interviews were conducted with six case study participants. These interviews provided an understanding of how each of the participants interacted with the learning environment, their instructor, and their classmates. The interviews also produced student self-report data on their progress, or lack thereof, throughout their respective course as well as any concerns they experienced with the instructor, classroom, equipment, or the program.

Additionally, the individual case study participants were asked to discuss their experiences with the college's registration process, and what skills they hoped to learn from the course. Throughout the remaining interviews the case study participants, based on the observations of their individual class sessions, were asked to discuss their progress and their evaluation of the course, instructor, and program. These interviews occurred approximately every two weeks throughout the duration of each course.

A final interview was completed after each student's last class session. During the interviews, students were asked to discuss what they liked or did not like about the instruction, whether they believed they achieved their own learning objectives, and to provide recommendations for improvement to the course and program. Any differences noted between the observational data and the survey results, or prior case study interviews, were documented and discussed with the participants during these interviews.

Instructor Interviews

Although not planned during the design of the study, interviews were also conducted with the instructor at three points during each course. As previously noted, the same instructor was assigned by program administrators to teach both courses. During the initial interview, data were solicited on the instructor's education and work experience, including his teaching experience.

The instructor was also asked to compare the teaching methods he employed in each of the classes. Data collected during the observational phase suggested that he employed a slightly different method of instructional delivery in each course. The instructor was also asked if the college's administrators provided him with any suggestions or advice on how to approach teaching the courses because the instructor's position was that of a part-time adjunct faculty member.

During the remaining interviews, the instructor was asked to discuss his observations of the overall progress of the case study students, other students, and the course itself. He was also asked to discuss how successful he believed he was in meeting the goals and objectives outlined in each course syllabus. Additionally, he was asked how effective he felt the interactions between his students and him were in meeting course objectives as well as any specific concerns he may have had regarding the classroom and equipment. Finally, the instructor was asked about any concerns expressed to him by the students that could affect how they valued the course and program.

Survey Instruments

To determine why students registered for their courses, we developed and administered a pre-course survey. The survey asked students to provide basic demographic information. It also asked students to discuss the goals they expected to achieve as a result of their involvement in the course, their evaluation of their experience with college personnel during the registration process, and prior experiences with lifelong learning programs.

The pre-course survey was composed of Likert-type items and open-ended questions, and designed for anonymous response. Survey responses aided us in developing the semi-structured questions asked during the initial interviews with the case study participants. The survey responses also assisted us with the development of semi-structured questions for the end of course interviews.

The primary survey instrument we employed for our study was an attitudinal survey. Consisting of six, five-point Likert-type scale items and four open-ended questions, the survey was administered at the mid-point and end of each of the courses, and solicited students' evaluations on the course and materials, the instructor, the

program's facilities, and their experience with the registration process. The Likert-type items ranged from strong disagreement to strong agreement, and were accompanied by four open-ended questions.

The data collected from the surveys provided a basis for the development of semi-structured questions that were asked during the end-of-course interviews. It was anticipated that the self-report data of their learning experiences would either confirm or dispute the data that were collected during the class observations and individual case study interviews.

End of Course Interviews

For this phase of our study, we developed a guide that would be used by two research assistants hired for this phase of the study. Our objective for employing assistants for this phase was to help reduce the potential for researcher bias.

Between two and four weeks after they completed their courses, students were contacted for end of course interviews. Including the six case study participants, twenty-three student interviews were conducted. Seven students either did not respond to repeated requests for interviews or declined to be interviewed.

The format for the interviews consisted of questions based on the data collected from the pre-course survey, case study interviews, researcher observations, the mid-point, and end of course surveys. The interview data were professionally transcribed and then reviewed, and compared to the raw data for accuracy. Upon completion of each post-course interview, students were offered the opportunity by the interviewers to review their interview transcriptions for accuracy. All students declined to review the transcriptions of their interviews.

Archival Data

To establish a foundation and build a sense of context for the study, archival data were collected from course surveys for the previous three years of the two courses that constituted the target of the study (n=387). The instrument employed for the surveys was the same attitudinal survey used to collect data at the mid-point and end of each course that comprised the focus of this study. The instrument was developed during my doctoral coursework, and was administered for anonymous response.

The collection of the archival data allowed me to compare student responses from prior years and sections of the courses with those from the sections constituting the focus of this study. The archival data also provided a foundation for the development of the questions asked during administration of the pre-course survey.

The quantitative and qualitative survey data were appropriately cataloged according to course name, semester, and year. As evaluations from the current study were completed, the data were analyzed and compared with the archival data. Evidence of recurring problems in instructional delivery, registration processes, or overall service to the students may indicate that such problems may not have been adequately addressed due to a lack of data this study intended to provide.

Data Analysis

Qualitative Data Analysis

Although we discuss the methods we employed for collecting and analyzing the qualitative data in two distinct sections of this article, in this type of research neither activity is completely distinct from the other. In essence, analysis of the qualitative data began as soon as the collection process was initiated.

We employed the constant comparative method of analysis developed by Glaser and Strauss (1967) throughout our analyses of all the qualitative data. As the audiotapes of the interviews and observations were transcribed, verbatim, by a professional transcriber and returned to us, we checked the transcriptions against the tapes for any errors. We also provided an opportunity to both the instructor and students to review the completed interview transcriptions for accuracy. None of the participants accepted the offer.

Open coding was employed at the initiation of all data collection to assist us in organizing the data into meaningful, yet preliminary, categories and sub-categories from which more in-depth analysis occurred. Case study interviews and observational data were coded and analyzed individually. As initial categories were identified, we employed axial coding to link and relate categories and subcategories that were produced.

The use of axial coding provided us with the opportunity to better understand how the categories and subcategories were related. It provided us with a better understanding of what Strauss and Corbin (1998) described as “the conditions, actions / interactions and consequences associated with phenomenon” (p. 126).

These data were then compared with one another and with data from subsequent case study interviews and class observations as well as the end of course interview data for the emergence of similarities both within and between categories. As a result, we were able to reduce the data to where the observed or recorded actions or responses of the students within each class and between each class were reviewed for similarities or differences.

Quantitative Data Analysis

Threats to internal and external validity as well as overall reliability of the primary survey instrument were addressed in pilot tests conducted by this article’s primary author. Employing Cronbach’s Alpha in which .80 or higher is considered acceptable as a base measure of reliability, instrument reliability was determined as .9464 for the first pilot, while the second pilot test of a revised instrument reported an alpha of .9475.

As part of the validation process, colleagues familiar with the use of this type of instrument reviewed the survey for validity or appropriateness to the survey’s intent. Based on input from these sources, it was determined that the statements provided in the instrument were appropriate in effectively soliciting responses from program participants regarding their evaluation of the course in which they participated as well as the overall program.

To aid in the analysis of the data, we employed SPSS Version 10.0 for Windows (SPSS, 2000) to create a data file corresponding with each Likert-type item that constituted the quantitative component of the survey instrument. Tables were created to illustrate the results of the analyses all of which were conducted at the 95% confidence level ($<.05$) or less.

As the Likert-type survey instrument consisted of interval variables, we employed simple descriptive analysis to determine the frequency of responses to each statement. We then employed t-tests in conducting comparisons of the surveys' Likert type items between its administration at the mid-point and end of each course. The presence of differences in students' responses between the mid-point and end of course could indicate potential concerns with the quality of the course or program. The presence of such differences could indicate the appropriateness to program quality of conducting mid-point evaluations.

Finally, we employed Pearson Product-Moment Correlation Coefficient to determine if any relationships existed between students' level of agreement of the benefit they may have derived from the course, and two variables specifically not related to instructional delivery. Specifically, we wanted to determine if students would rate similarly a variable discussing instructional delivery (the course will benefit me) and two variables extraneous to instructional delivery (your experience with the registration process is satisfactory and the facilities are satisfactory).

The existence and the strength of a positive relationship or relationships between either of the two variables, extraneous to instructional delivery and the variable "the course will benefit me," could suggest that students may consider factors other than instruction in determining whether the course benefited them. Similar to our other analysis of the survey data, we conducted the correlations of both the mid-point and end of course surveys for each class as well as correlations of the combined data for both classes.

Validity and Reliability

As Gee (1999) found, the validity of any research project is determined not by the effectiveness of a single method of data collection and analysis, but rather how various methods are employed in harmony to arrive at findings that are valid and trustworthy. As Strauss and Corbin (1998) suggested, they also complement each other, enhancing the overall effectiveness of the study.

The use of mixed methods, Patton (1990) reiterated, strengthens the validity and reliability of the study's data collection through triangulation. This provides the study with more concise and stronger data for analysis than would be possible through the use of a single method as well as helping to assure the trustworthiness of the data. As Maxwell (1996) indicated, effectively assuring the validity of a humanistic study should be addressed throughout the data collection process.

Those who read this study must understand that the various qualitative methods employed to gather and analyze the data were not intended to assure that any single empirical truth would be arrived at. Rather, as Blackman (2001) discussed, the intent of using these methods in which data were analyzed and re-analyzed several times was to insure that I was able to arrive at a reliable and valid account of the activities of the

students and instructor for these two courses as well as their reflections of their experiences.

Therefore, the use of qualitative methodologies combined with the administration of a quantitative survey was most appropriate to a study that sought to determine how adult non-degree seeking students enrolled in two ten-week long non-credit lifelong learning courses at Ivy Tech State College in Lafayette evaluated their participation. Included in this process were data collected from the administration of the survey instrument at two distinct points to the same students, my in-class recorded observations and case study interviews, and the interviews that were conducted with students after completion of each of the two courses.

The collection of these data assisted us in developing what Geertz (1973) defined as a thick description of each subject's background as well as his or her overall participation and reactions to the activity that occurred within each class. Their behavior within the context of the study is based, as he suggested, on their life histories – their past experiences including their education and work experiences--as well as their prior experiences with similar environments.

The use of multiple subjects or reports in case study research also provides, as Cook and Campbell (1979) and Geertz (1973) reported, triangulation of the evidence produced through multiple viewpoints. As Gilgun (1994) found, the result of this effort are findings that are more reliable. However, the use of multiple collection methods did not alone assure that the data collected and analyzed was done so in a manner that was as valid and trustworthy as possible.

Throughout the study, the primary author of this article maintained a researcher's journal, which was developed out of concern regarding the reliability of the methods employed to collect the data. Using this journal I created an audit trail of the manner in which I collected, analyzed, and interpreted the data. I also recorded my decisions regarding the direction I took in arriving at my findings.

Threats to Validity

Triangulation through the surveys, observations, and interviews employed for the study were all intended to reduce as much as possible the potential for the occurrence of bias. However, there were threats to the validity of the study that had to be identified.

These threats included the potential for researcher bias, or what Miles and Huberman (1994) called researcher effects. The greatest potential for this situation occurred during the collection of observational data, as I was effectively a participant observer in the two classes that constituted the focus of this study.

However, since I was present during the entire ten-week session of each course, my tape recorder and I became what Miles and Huberman (1994) described as a part of the landscape of each class. In essence, I spent enough time in each class that the effect on the students, instructor, and any deviation in the instructional environment that my presence could produce should have been reduced.

At the same time, as Miles and Huberman (1994) noted, another threat to validity of the intended study were the effects my presence in the class could have on my analysis and interpretation of the data collected through audiotaping, researcher observations, and field notes. Specific threats to validity of the proposed study included incorrect

interpretation of the subject's responses, failure to record accurately any observations or interviews conducted for the study, and not considering alternative explanations or understanding of what was being studied.

I was formerly employed by Ivy Tech State College at Lafayette, and was the developer and administrator of the Lifelong Learning Program at the Lafayette campus. A potential existed that I could possess some natural bias regarding the program and its courses because of these prior responsibilities. Therefore, throughout this study I maintained a journal in which I consistently recorded any bias I thought might have emerged as a result of my own participation in these courses, both as a participant observer and the interviewer of the case study participants. I also felt that the use of third party interviewers was essential during the post-course interviews to reduce the effect of researcher bias discussed by LeCompte and Preissle (1993), which could have adversely affected the outcomes of the study.

Maxwell (1996) indicated that by understanding the potential for researcher bias, such biases could be eliminated during data collection and analysis by employing processes such as coding and triangulation of data collection sources, which I previously discussed. Similarly, Maxwell (1996) stated the influence of the researcher's presence on the environment or manner in which the study will be conducted, also known as reactivity, is important to understand as well as to account for during the study.

Findings

Our findings are presented in two sections. The first section includes findings from the quantitative survey data collected from the mid-point and end of each course. The second section includes findings from the qualitative data collected during the observational phase of the study, and from the individual case study and post-course interviews.

Findings from Quantitative Analyses of Survey Data

Golden age computing

Our findings from the quantitative component of our investigation included data from the mid-point and end of course surveys distributed to students in each course. Data for the *Golden Age Computing* course are presented in Table 1. At the mid point of this course, students reported that the instructor was well prepared and knowledgeable. The findings also suggested that they agreed or strongly agreed that the course materials were well prepared and helpful, and that the course would benefit them. However, the findings suggested some disagreement among students that their experience with the program's registration process was satisfactory.

The end of course findings for *Golden Age Computing* suggested that students strongly agreed that their instructor was well prepared and knowledgeable. Similar to the findings from the mid-point survey (see below), students indicated some disagreement with the statement that their experience with the registration process was satisfactory. Although the findings indicated that their level of agreement with the statement had improved since the mid-point survey, it remained less than their agreement with the

survey's other items. These lower ratings could indicate residual concerns about students' experiences with a registration process designed more for traditional college students than for adults participating in short-term, non-credit courses.

Table 1

Descriptive Statistics from Mid-Point and End of Course Quantitative Survey Data from "Golden Age Computing"

	Mid-Point			End of Course	
	N	Mean	Stan. Dev.	Mean	Stan. Dev.
The instructor is well prepared and knowledgeable	15	5.00	.0000	5.00	.0000
The course materials are well prepared and helpful	15	4.67	.4923	4.54	.5189
The course will benefit me	15	4.58	.5149	4.54	.5189
Adequate time is devoted to the topic	15	4.42	.9000	4.15	.8000
Your experience with the registration process is satisfactory	15	3.17	.8348	3.61	.9574

We employed Pearson Product-Moment Correlation Coefficient to determine if students would rate similarly a variable discussing instructional delivery (the course will benefit me) and two variables extraneous to instructional delivery (your experience with the registration process is satisfactory and the facilities are satisfactory). There was a positive relation between the two variables suggesting that students may consider factors other than instruction in determining whether the course benefited them.

At the mid-point of *Golden Age Computing*, a moderate positive correlation (.507) was found between the variables "the course will benefit me" and "your experience with the registration process is satisfactory." At the end of the course a correlation (.510) existed between these variables. These findings suggest that students'

ratings of their registration experiences did not significantly affect their consideration of whether the course benefited them during the two administrations of the survey.

At the mid-point of *Golden Age Computing*, a positive moderate correlation (.584) was found between the survey's variables "the course will benefit me" and "the facilities are satisfactory." In contrast, analysis of the end-of-course data found a strong positive correlation (.867) between "the course will benefit me" and "the facilities are satisfactory." These findings suggest that a stronger relationship existed between "the course will benefit me" and "the facilities are satisfactory" at the end of the course than existed at the mid-point of the course. The differences noted could have been affected by persistent problems students experienced with their computers, the problems the college experienced with the building's heating system throughout the course, or both.

In responding to the survey's open-ended questions, students in *Golden Age Computing* indicated that a general knowledge of computing was the benefit they took away from their course. They also recorded positive comments for the instructor and the course, but recommended that additional time be allotted for instruction.

Findings from our analyses of *Computing in the Workplace* are contained in Table 2. Findings from analyses of the mid-point survey suggested that students agreed that the instructor was well prepared and knowledgeable. These findings also suggested that students agreed that the course materials were well prepared and helpful, and that the course would benefit them. Additionally, the data suggested that they agreed that adequate time was devoted to the topic, and that students had a more satisfactory experience with registration processes than did their peers in *Golden Age Computing*.

By the end of their participation, students continued to agree that the instructor was well prepared and knowledgeable. Students also continued to provide positive ratings regarding course materials, the benefit the course provided them, and the time devoted to its content. Similar to their peers in *Golden Age Computing*, their agreement with the item "your experience with the registration process is satisfactory" was higher at the end-of-course than at the administration of the mid-point survey.

However, the mean scores for these two items were considerably less than the mean scores for the survey's other items, indicating some disagreement by students with respect to each statement. Additionally, students' agreement with the item "your experience with the registration process is satisfactory" was higher in *Computing in the Workplace* than *Golden Age Computing*.

We found a very strong positive correlation (.882) between the variables "the course will benefit me" and "your experience with the registration process is satisfactory" at the mid-point of *Computing in the Workplace*. However, we found a weaker positive correlation (.356) between these same variables during our analysis of the end of course data. It is possible that these differences could be due to the declining influence of students' registration experiences over the duration of the course, the positive impact of the instructor and the way he taught, or both.

We also found a strong positive correlation (.902) existed between the variables "the course will benefit me" and "the facilities are satisfactory" at the mid-point of the course. However, as with our other findings, we found a weaker, positive correlation (.549) existed between these variables at the end of the course. Similar to our findings from *Golden Age Computing*, it is possible that the weaker relationship between variables

at the end of the course was due to persistent computer problems, problems that college personnel experienced with the facility's heating system, or both.

Table 2

Descriptive Statistics for Mid-point and End of Course Quantitative Survey Data from "Computing in the Workplace"

	Mid-Point			End of Course	
	N.	Mean	Stan. Dev.	Mean	Stan. Dev.
The instructor is well prepared and knowledgeable	15	4.63	.2581	4.67	.8006
The course materials are well prepared and helpful	15	4.15	.5164	4.50	.5222
The course will benefit me	15	4.40	.4577	4.25	.4522
Adequate time is devoted to the topic	15	3.92	.7559	3.92	.9003
Your experience with the registration process is satisfactory	15	3.85	.4140	4.08	.5149

Students responding to the survey's open-ended response questions in *Computing in the Workplace* reported that the course would benefit them in their current work. Similar to their peers in *Golden Age Computing*, students indicated that a general knowledge of computing was the benefit they took away from their course. They also positively evaluated the instructor, but recommended that additional time be allotted for instruction. Additionally, they recommended that homework be assigned in future sessions of the course.

Findings from Quantitative Analyses of Archival Survey Data

We also analyzed archival survey data from the previous three years of both courses to note similarities or differences in student responses from prior years, and

sections, of the courses with those from our study. These data represented the survey responses of 266 adults participating in *Golden Age Computing* and 121 adults participating in *Computing in the Workplace* from 1999-2001. The analyses of archival data included students' evaluations of six different instructors during this period.

In analyzing the archival data, we found similarities with findings from the current study. Included among these similarities were students' favorable ratings of their instructor as well as their overall learning experiences. Students also agreed with the survey's statements regarding the college's registration processes and the time allotted for instruction. Similar with the findings from the current study, students indicated less agreement with statements regarding the time allotted for instruction and their registration experience than with the survey's other statements.

Students' responses to the survey's open-ended questions were similar to findings from the current study. Included among the recommendations for course improvement were more time for instruction, facility and equipment improvements, and better textbooks.

It was apparent that program administrators provided an instructional environment that students indicated was beneficial to their learning. Findings indicated that the instructors program administrators assigned to teach these courses contributed substantially to the development of the benefits students believed they derived from their participation. Findings also indicated that to a somewhat lesser extent the materials selected for each course also contributed to students' satisfaction with their learning experiences.

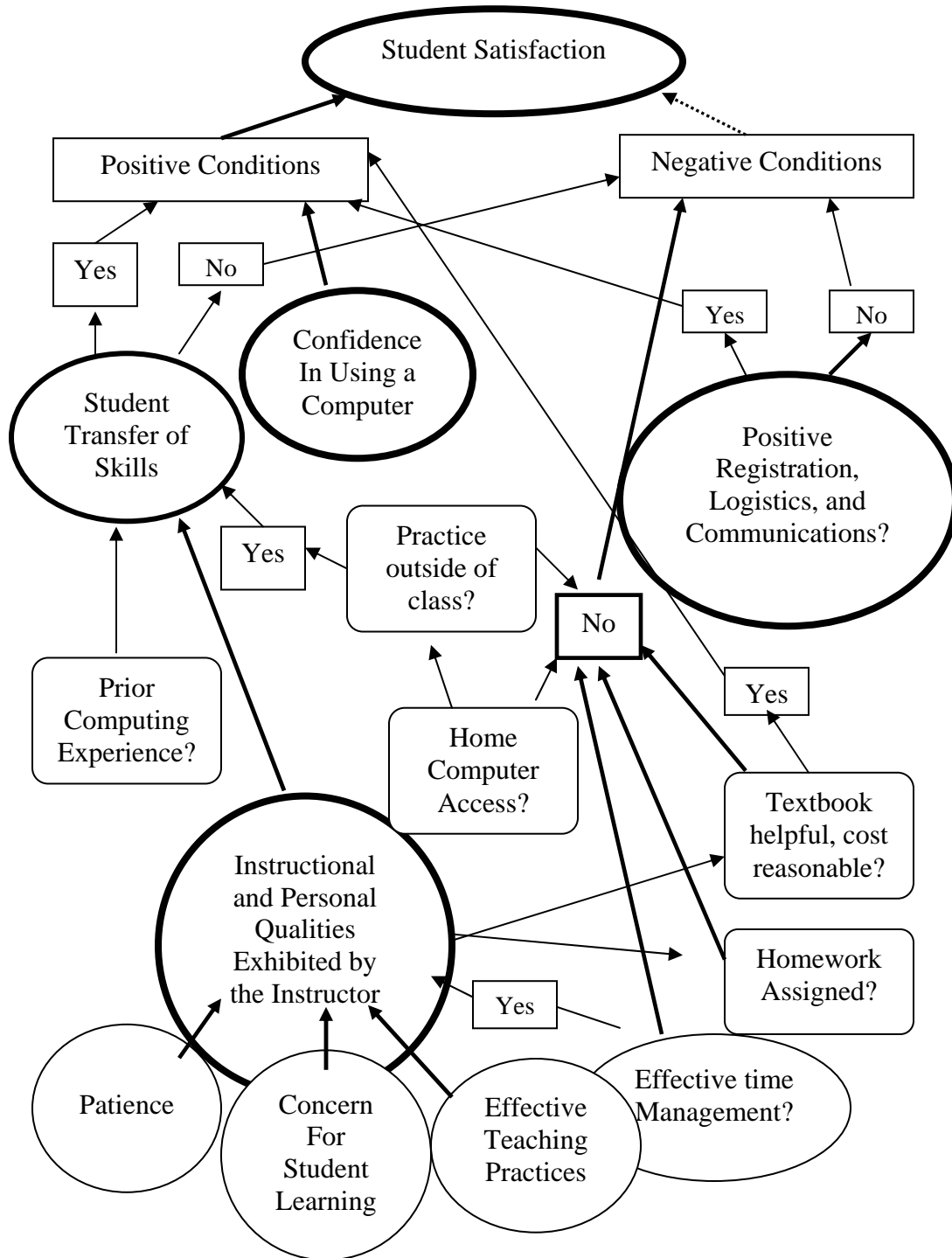
However, survey responses suggested that students had some concerns regarding the length of their course, the program's physical facilities, and their experience with the College's registration process. Similar to their counterparts in the current study, students' agreements with these items were less than their ratings of items related directly to instructional delivery. Similarities in findings from the current study and archival data suggest that while the quality of instructional delivery has remained consistent, the lesser ratings of students regarding the amount of time allotted for instruction and the College's registration processes have also remained constant.

Findings from Qualitative Analyses Observations, Exit Interviews, and Case-Study Interviews

The observational data provided a foundation for developing individual case study interviews and end of course interviews conducted with all students from each course. Employing the constant comparative method of data analysis, we reviewed transcripts of our case study and end-of-course interview data for similarities and differences.

Satisfaction emerged as the primary theme in the data set, reflecting the topic that dominated discussions in most interviews. Levels of student satisfaction were a function of several contributing factors: (1) the instructional and personal qualities exhibited by the instructor; (2) evaluation of their experiences with registration and communications with program and college personnel; (3) confidence in using a computer; and (4) students' ability to transfer and apply the skills they learned in the course to their everyday lives. These factors were then organized according to how they affected student satisfaction (See Figure 2).

Figure 2. Illustration of factors that determined student's satisfaction with their course and program.



Positive conditions

Contributing significantly to student satisfaction were the instructional and personal qualities of the instructor including: (a) effective teaching practices; (b) patience; and (c) concern for student learning. Satisfaction appeared to be grounded in the techniques the instructor employed throughout each course.

In *Golden Age Computing*, the instructor employed a pedagogical approach to learning featuring lecture, repetition, and summarization to guide students through each step of the instructional process. In *Computing in the Workplace*, the instructor employed a more andragogical approach, in which he would briefly demonstrate the process associated with a particular topic then direct the class to work on their own, acting as a resource for assistance rather than an instructor.

Other contributors to students' satisfaction included their belief that they achieved the objectives they had set for themselves prior to their course. However, our findings indicated that a more important contributor to their satisfaction was the confidence students gained in using a computer. Additionally, we found that their ability to practically and readily apply the skills they learned during their course also contributed to their satisfaction.

Negative conditions

Although students gave their instructor an overall positive evaluation, they expressed concern regarding his time management of each course. With only one exception, they indicated that the final sessions of their respective courses were rushed. As solutions, they recommended that additional hours of instruction be added to their respective course, or that specific topics presented within the current courses be developed into separate courses.

Findings also indicated that students generally expressed concerns regarding key experiences unrelated to instruction. These concerns were primarily related to unsatisfactory registration experiences and confusing communications from college personnel regarding the status of their course and its location. Students in *Golden Age Computing* also expressed concerns about the cost of their texts, while students in both courses noted difficulty using the texts selected by the college without significant assistance from the instructor. Although students indicated their concerns would not prevent them from future participation, the process of registration and communications with college personnel did result in frustration, confusion, and inconvenience. If not addressed by college personnel, it is possible that similar concerns by students in future courses could affect both satisfaction and subsequent enrollment.

Summary, Potential Applications, and Implications

Summary

Students' responses both in the individual case studies and the end-of-course interviews generally reflected the responses they provided to the questions on the survey instrument distributed at the mid-points and ends of each course. However, the

observational and interview data collected over the ten weeks of each course allowed for the development of a richer understanding of the responses students provided on the surveys.

Although the survey and interview data appeared to be comparable, the survey data provided only limited insight into how students evaluated their participation and their courses as well as those activities unrelated to instruction. We found that students were consistent in their positive evaluations of the instructor and their overall learning experiences. They were also consistent in their evaluations of the time allotted for instruction, communications with college and program personnel, and their experiences with the College's registration processes.

Additionally, during our analysis of the current study survey data, we found the existence of relationships between students' evaluations of their learning experiences, the condition of the physical facilities, and their experiences with the College's registrations processes. Although the strength of these relationships varied between courses and survey administrations, our findings suggest that variables unrelated to instruction affect students' evaluations of their learning experiences more than one might expect.

Together, our findings showed that students' evaluations of their experiences regarding the College's registration processes, their communications with College personnel, and the conditions of the physical facilities were positive. However, their responses about these kinds of issues were much more varied than their responses to issues relating directly to instruction.

Students in both courses generally expressed concerns during their interviews regarding their experiences with the program and the College that were unrelated to instruction. Students' concerns were generated by their unsatisfactory registration experiences and the confusing communications several noted with college personnel regarding the status of their course and its location. Students also expressed concerns about the costs of their texts. Additionally, some students indicated that their texts were difficult to use without directions provided by their instructor. During their interviews, students indicated these concerns would not prevent them from future participation in the program. However, the process of registration and communications with college personnel resulted in frustration, confusion, and inconvenience. Importantly, none of these issues would have been detected through surveys alone, at least the kind of surveys typically used for course evaluations at the college.

Adults participating in non-credit, lifelong learning programs are not only students but also consumers of a product. Miller (1990) indicated that the continued growth of lifelong learning programs is dependent not only on their instructional quality, but their overall effectiveness and attentiveness to customer service. By addressing the concerns of their customers regarding registration processes as well as communications on issues such as textbook purchases and class location, program and college administrators can increase the satisfaction of students' overall experiences. The kinds of data collected through observations and interviews in this study proved relevant to these concerns. Findings from this study also indexed the importance of classroom learning environments and instructional techniques.

As we noted previously, the instructor employed different teaching techniques in each class. In *Golden Age Computing*, the instructor established an environment in which a pedagogical approach to learning was prevalent. In *Computing in the Workplace* he

established an environment in which learning was essentially self-directed. Adapting the learning environments as a function of course content and perceived student needs seems to have resulted in highly satisfactory experiences for students in both courses, who overwhelmingly evaluated the instructor accordingly.

The lifelong learning program hires part-time adjunct faculty who have little or no prior teaching experience, but are experts in their fields and on the topics they teach. Providing these faculty with basic understandings of how adults learn and which pedagogical strategies might be most effective, in which situations, could help instructors create optimally effective learning environments and experiences for their students, potentially resulting in greater student satisfaction.

Applicability and Utility of the Evaluation Protocol

The mixed methods evaluation protocol we developed for this study was intended to provide administrators with more relevant information for the improvement of lifelong learning programs than the methods they were previously using could provide. The protocol developed for this study provided data from three perspectives including student surveys, researcher observations of each class, and student interviews.

Findings from the observational component of the model provided an understanding of the learning environments of the focal courses, and more specifically the differences that existed between them. Findings from observations have considerable value in assisting administrators in preparing their adjunct faculty for facilitating adult learning opportunities offered by the program. The uniqueness of the adult learner and the distinct differences in the ways adults (versus children) learn make creating optimal learning environments and experiences for them a crucial issue.

Findings from the observational component of the study support Knowles' (1980) concept of a learning continuum between pedagogy and andragogy. Knowles suggested that the learning preferences of adults fall within this continuum. Although his concept was based on the preferences of individual adult learners, the findings from our study suggest that when presented with the opportunity adults as a cohort will welcome and express satisfaction for those instructional approaches with which they are most comfortable.

More research is obviously needed in this area. However, the findings of our study suggest that, as Knowles (1980) recommended, understanding the differences that may exist in the preferred learning environment of adults could assist program administrators and the part-time, adjunct faculty they hire to facilitate more effective learning experiences for their students.

Findings from analyses of individual case studies and the end of course interviews provided insight into how students applied the skills they learned in their personal or professional lives. These kinds of findings and the insights they afford could be very useful to program administrators in designing curricula to meet the specific learning and application needs of students registered in their courses.

Although the evaluation model we designed for this study produced new and relevant data useful for the implementation of program improvement activities at the Lafayette Indiana campus of Ivy Tech State College, employing the model at the end of courses, similar to those that were the focus of this study, could prove impractical for

program administrators. Therefore, we believe consideration should be given to the development of an implementation plan in which the model is employed on a schedule that alternates with an institution's current course or program evaluation process.

In implementing such a plan, the model could be employed on a timetable in which each course in a program is evaluated quarterly, semi-annually, or annually depending on the frequency with which it is offered. Such an implementation plan could provide administrators with data that would allow them to engage in a comprehensive evaluation of the overall quality of their non-credit program. Regardless of how the model might be integrated into a program's improvement activities, the kind of student-derived data the model can produce could be vital to administrators wishing to determine the strengths and weaknesses of their programs.

Implications and Recommendations for Further Study

The evaluation model we developed for this study is reasonably comprehensive relative to most models, which usually rely on a single instrument (typically the end of course evaluation survey). By using this more comprehensive model, administrators could not only gather more descriptive data to assist them in their program improvement activities, but these data would also assist them in gaining a better understanding of the adult students who participate in their programs. However, additional research is recommended in which a greater amount of participant data is collected and analyzed to determine the efficacy of the model for use by programs among larger and more diverse populations and courses.

Additional research should also be considered regarding the learning preferences of adults, specifically those of older adults. Although different instructional techniques were employed in each class, it remains unknown whether the satisfaction students expressed about their learning experiences are a result of the different teaching styles employed in each course. Additionally, data from this study did not provide insight into how students would have responded had a different teaching style been employed in their class, or if they would have responded differently about their experiences if they had knowledge of the style employed by the instructor in the other course.

During a review of relevant literature, we found that researchers such as Knowles (1984) and Delahaye, Limerick, and Hearn (1994) discussed the learning preferences of adults. However, their work focused almost exclusively on preferences of individual students and ignored issues related to group process, cohort composition, and so on. Further research that takes such factors into account could provide even richer understandings of adult learners and the learning environments and approaches that are most comfortable and effective for them. These understandings are particularly important at a time when the field of non-credit lifelong learning continues its rapid growth.

Such research could feature experimental designs in which the teaching styles employed in different classes are switched. Within such designs, for example, andragogical methods might be employed in *Golden Age Computing*, while pedagogical methods are employed in *Computing in the Workplace*. Data could be collected and analyzed from students strategically sampled by group to compare the effects different pedagogical approaches have on students' learning experiences and their overall satisfaction.

Even in the absence of such interventions, though, the evaluation protocol we designed could be revised to collect data on whether students are aware of the teaching style employed in their classes. Additional research could also seek input on whether students liked the teaching styles they experience or might prefer different styles as well as the reasons for their preferences.

We believe our recommendations for further research would enhance and strengthen the ways in which mixed methods evaluation protocols are used, to improve the instructional design and delivery of non-credit programming to adults. In particular, designing ways to understand concerns related to course time management, registration, and communications with college personnel through the strategic inclusion of student "voices" would likely lead to richer, more comprehensive, and more distinctive findings about what contributes to student satisfaction. In turn, these findings could be used to develop and adapt programs in ways that would yield higher student satisfaction ratings across the range of issues addressed in our study.

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